Potential 2004 'global' goals or priorities

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Overview/Context

- ◆ Workplan for 2004 is under discussion
  - ▪ Requirements in working areas and overall
- ◆ Potential global goals for 2004
  - ▪ My candidate list and my assesments/views follow
- ◆ Feedback please !!
  - ▪ Do you have other potential 'global' issues ?
  - ▪ Your first assessment of the priority for you and your fellow users
- ◆ Future actions
  - ▪ TSB will discuss all potential working items & priorities
    - ◆ Impact of/on other items will be assessed
  - ▪ TSB to create G4 release plan and workplan for 2004
    - ◆ It will be posted on the G4 web site
      - ▪ As in 2002 and 2003 (release plan)
    - ◆ We will present this at a future G4 TF meeting

Potential items

◆ Robustness and effort in maintenance

◆ CPU performance and memory

◆ Acceptance testing of Geant4 releases

◆ Geant4 Physics Book, volume 1

◆ Tutorials and User Workshops

Robustness

- ◆ Increasing fraction of problems are hard
  - ▪ Problems now occur after long runs
  - ▪ Re-running takes a lot of effort
    - ◆ Reproducing in other contexts can be very hard
  - ▪ Reproducibility is very important!
- ◆ Impact
  - ▪ Big impact on HEP production runs
  - ▪ Yet individual users can be 'hurt'
- ◆ Effort in maintenance is significant and increasing
- ◆ My thoughts on potential actions:
  - ▪ Put effort to identify key areas, introduce new techniques, collaborate, address weak points

CPU performance

- ◆ Rising importance of CPU performance and memory usage
  - ▪ For huge production runs of large experiments (BaBar, HARP, CMS, ATLAS, LHCb)
- ◆ Known areas where improvement is needed:
  - ▪ EM showers
  - ▪ Field propagation
- ◆ Effort could be profitably invested
  - ▪ to identify more benchmarks, profile them and identify hotspots
  - ▪ Collaborate on using & improving tools with physics 'bent'

Acceptance testing

- ◆ Acceptance testing of Geant4 releases
  - ▪ Today is limited effort
- ◆ Validation for each use case
  - ▪ Is user's responsibility (no Warranty!)
- ◆ Yet we wish to control at release time
  - ▪ Most key aspects of physics performance
- ◆ Effort required
  - ▪ Identify set of key use cases and physical quantities to test
  - ▪ create simplified test cases for automated testing
  - ▪ to capture current test-beam validation studies 'for future'

Geant4 Physics Book

- ◆ Documenting Geant4's physics
  - ■ In use cases with mature comparisons
  - ■ To aid users in assessing status
  - ■ As a major reference for G4 and users
- ◆ Project under discussion in G4
  - ■ Collaboration with validation activites
    - ◆ Is highly desirable
- ◆ Effort
  - ■ Substantial activity / coordination / resources

Tutorials

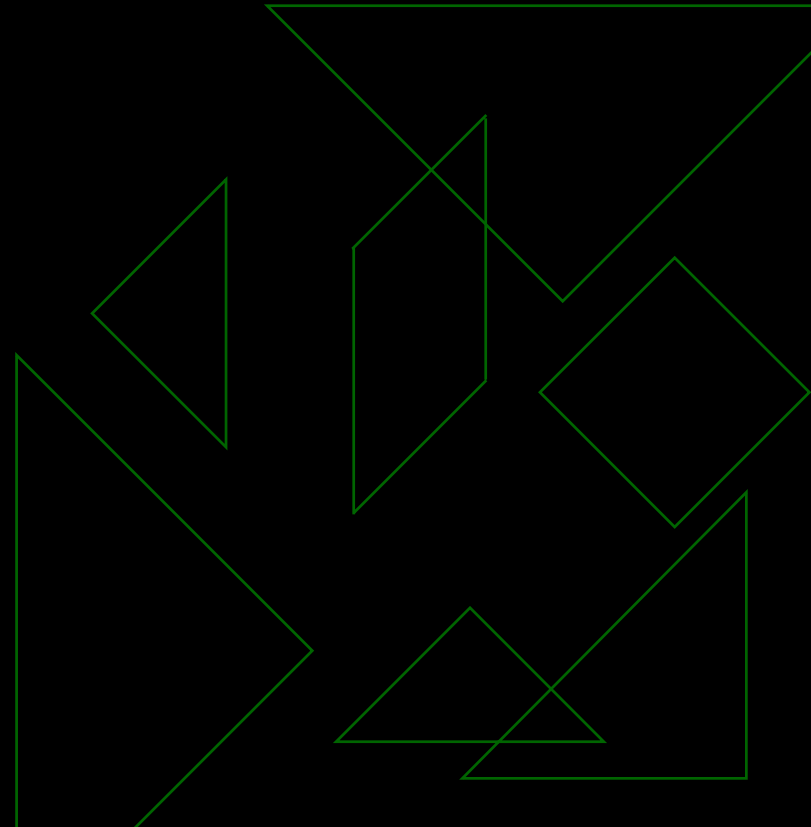Holding Tutorials and User Workshops

- ◆ Impact
  - Need to introduce new users
    - ◆ And assist current users
  - Promotes interaction of users / developers
- ◆ Effort
  - Organisation & preparation is major effort

Your suggestions

◆ Suggestions for potential 'global' items

◆ Please!

Priority

Your input on the relative priority:

- ◆ Robustness and effort in maintenance
- ◆ CPU performance and memory
- ◆ Acceptance testing of Geant4 releases
- ◆ Geant4 Physics Book, volume 1
- ◆ Tutorials and User Workshops

◆ Future actions

- TSB will discuss all potential working items & priorities

  - Impact of/on other items will be assessed

- TSB to create G4 release plan and workplan for 2004

  - We will present this at a future G4 TF meeting